Space Weather Forecast

Issued on Sunday, 04 August 2024 at 13:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares expected, chance of Strong flares and of exceeding S1/Minor Radiation Storm threshold. Possible glancing Coronal Mass Ejection (CME) occurred early Day 1 (04 Aug). Chance of G1/Minor Geomagnetic Storm.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Moderate. A peak impulsive Moderate-class flare was observed at 03/1839UTC from a complex sunspot region in the northeast quadrant. Another Moderate-class flare was also observed at 03/1930UTC from a region still around the east limb, which is due to rotate onto the Earth-facing disc in the next day or so.
An active disc, with twelve sunspot regions currently visible. Three regions remain clustered close together in the southwestern disc will soon rotate off. This loss is being countered by further regions emerging in the east, one has already been numbered AR3780 and looks to be potentially significant. Other regions on the disk are magnetically complex, though largely benign in terms of flare activity at the moment.
No other Earth directed Coronal Mass Ejections (CMEs) have been observed in the past 24 hours.
Solar Wind / Geomagnetic Activity: The solar wind has remained background levels below 400 km/s. The Interplanetary Magnetic Field was weak to moderate, with the north-south component also varying weakly before becoming Moderate with a southward orientation. Geomagnetic activity was Quiet to Unsettled (Kp 1-3) before becoming Active from 04/0300-0600UTC then revised up to minor geomagnetic storm Kp5 (G1) between 04/0600-0900UTC.
Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High activity forecast to continue, with occasional Moderate class flares expected and a chance of isolated Strong flares.
Solar Wind /Geomagnetic Activity: The weak shock from a CME originating from AR3768 at 01/0709UTC may have arrived early on Day 1 (04 Aug). Due to the large number of coincident CMEs in recent days, further arrivals cannot be ruled out through the period.
No coronal hole fast wind enhancements are expected during the period, with CME arrivals expected to be the main factor of interest. Geomagnetic activity is expected to be generally Quiet to Unsettled, with periods of Active to G1/Minor Storms and a slight chance of G2/Moderate Storms should any CME arrivals bring more than a glancing blow. In the absence of further CME influence, activity is likely to become mostly Quiet later in the period.
Energetic Particles / Solar Radiation: Solar radiation is currently at background levels, but with a chance of exceeding the S1/Minor Solar Radiation Storm level in response to larger flares from the western disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	Yes	30	10	10	10
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 M Class**	Yes	90	80	70	70
Very Active	**R3 to R5 X**	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	25	25	25	20
Very Active	**≥ S3 ***	No	5	5	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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